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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,085	03/02/2004	Todd W. Steigerwald	5867-00900	2933

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EXAMINER
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NGUYEN, HUY D

ART UNIT	PAPER NUMBER
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2681

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/791,085	<b>Applicant(s)</b> STEIGERWALD ET AL.	
	<b>Examiner</b> Huy D. Nguyen	<b>Art Unit</b> 2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 21-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-9, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Hui et al. (US 2005/0041624 A1).

Regarding claims 1, 16, Hui et al. teaches a system for reducing electromagnetic interference between two or more co-located antennas (e.g., components 920 and 1010) coupled to the system, wherein the system comprises: a first antenna (e.g., component 920) configured for transmitting a first signal within a first frequency band (e.g., PCS); a second antenna (e.g., component 1010) configured for operation within a second frequency band (e.g., GPS) during transmission of the first signal; and an apparatus (e.g., component 1020 or 1120) arranged between the first and second antennas for intercepting electromagnetic energy radiated from the first antenna during transmission of the first signal, wherein the apparatus is configured for scattering the radiated energy away from the second antenna to reduce electromagnetic interference at the second antenna (see figures 10 and 11, paragraphs [0069], [0072], [0080]).

Regarding claim 2, Hui et al. teaches the system of claim 1, wherein at least a portion of the second frequency band overlaps the first frequency band (inherently).

Regarding claim 3, Hui et al. teaches the system of claim 1, wherein the apparatus is positioned proximate to the second antenna (see figures 10-11).

Regarding claim 4, Hui et al. teaches the system of claim 1, wherein the apparatus is positioned proximate to the first antenna (see figures 10-11).

Claim 5 is rejected with the same reason set forth in claim 1.

Regarding claims 6, 8, Hui et al. teaches the system of claim 1, wherein the system comprises any computing and/or telecommunications system capable of transmitting and/or receiving audio, video and/or data signals over a wireless medium (see paragraphs [0005], [0112]).

Regarding claim 7, Hui et al. teaches the system of claim 6, wherein the computing and/or telecommunications system is selected from a group comprising a server, a desktop computer, a notebook computer, a tablet compute, a hand held organizational and/or computational device, a mobile telephone, or a combination thereof (see paragraphs [0005], [0112]).

Regarding claim 9, Hui et al. teaches the system of claim 1, wherein the first antenna, the second antenna and the apparatus are coupled to internal components of the system and surrounded, at least in part, by a substantially non-conductive external surface (see paragraphs [0055], [0056]).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hui et al. in view of Herranen (US 6,752,320).

Regarding claim 10, Hui et al. teaches the claimed invention except an expansion card or sub-assembly, which is detachably coupled to the internal components of the system. The preceding limitation is taught in Herranen (see the abstract and column 3, lines 32-43). It would have been obvious to one having ordinary skill in the art at the time of the invention to apply the teaching of Herranen to the teaching of Hui et al. so that the antenna can be placed in a free area outside the device when it protrudes in its functional position. Thus, the antenna is located farther from the components causing radio interference (column 3, lines 32-43).

5. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hui et al. in view of Teshima (US 6,654,231 B2).

Regarding claims 11-12, Hui et al. teaches the claimed invention except that the first antenna, the second antenna and the apparatus are coupled to an external surface of the system, and wherein the external surface is configured for supporting and/or encasing internal components of the system. However, the preceding limitation is taught in Teshima (see figure 1; column 7, lines 25-34). It would have been obvious to one having ordinary skill in the art at the time of the invention to apply the teaching of Teshima to the teaching of Hui et al. to improve the performance of the antenna with no loss of reliability even with the antenna placed in the conductive housing.

Regarding claims 13, 15, the combination of Hui et al. and Teshima teaches the system of claim 11, wherein at least a portion of the external surface is formed from a substantially non-conductive material in the immediate vicinity of the first and second antennas and the apparatus (column 3, lines 15-19).

Regarding claim 14, the combination of Hui et al. and Teshima teaches the system of claim 11, wherein the first antenna, the second antenna and the apparatus are coupled to the external surface on one side or on different sides of the system (see figure 1; column 7, lines 25-34).

6. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hui et al. in view of Narayanaswamy et al. (US 5,905,467).

Regarding claims 17-18, Hui et al. teaches the claimed invention except that the relatively short distance between the first and second antennas is dependent on a wavelength of the first signal and a dimension of a surface upon which the antennas are coupled to the system. The preceding limitation is taught in Narayanaswamy et al. (see column 1, lines 60-67). It would have been obvious to one having ordinary skill in the art at the time of the invention to apply the teaching of Narayanaswamy et al. to the teaching of Hui et al. to improve reception by using diversity technique.

Regarding claim 19, the combination of Narayanaswamy et al. and Hui et al. does not specifically teach that the dimension of the surface is less than or equal to about 1m. However, it would have been an obvious matter of design choice to have the dimension of the surface being

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less than or equal to about 1m since it appears that the invention would perform equally well with the dimension of the surface being less than or equal to about 1m.

Regarding claim 20, it is inherent that the electromagnetic energy radiated from the first antenna propagates through free space as a plane wave having minimum and maximum electromagnetic energy levels at various locations along the surface, wherein the various locations correspond to fractional amounts of the wavelength of the first signal (principle of electromagnetic theory). The combination of Narayanaswamy et al. and Hui et al. teaches that the receiving end of the second antenna is positioned at a location of minimum electromagnetic energy (see Narayanaswamy et al.: column 1, lines 60-67).

#### ***Allowable Subject Matter***

7. Claims 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 21, the cited prior arts, either alone or in combination, fail to teach the system of claim 20, wherein the center of the apparatus is positioned proximate to the second antenna at a location of maximum electromagnetic energy.

Regarding claim 22, the cited prior arts, either alone or in combination, fail to teach the system of claim 20. wherein the center of the apparatus is positioned proximate to the first antenna at a location of maximum electromagnetic energy.

#### ***Contact Information***

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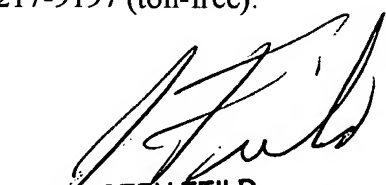
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy D. Nguyen whose telephone number is 571-272-7845. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Huy Nguyen



JOSEPH FEILD  
SUPERVISORY PATENT EXAMINER